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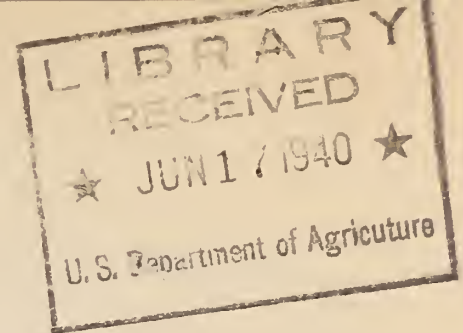
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U.S. Farm Security
Administration

CARE OF THE MOWING MACHINE

219403



With proper care a mowing machine should render satisfactory service for about 20 years. This would mean an annual depreciation of 5% or about \$4.00 per year on a machine costing \$80.00, besides repair and other costs which may average from \$4.00 to \$6.00 per year of service. What is necessary then to give proper care?

The most important part of the mower is the cutter bar assembly, which includes knife, guards, guard plates, wearing plates and knife clips. For efficient operation the assembly must have (1) proper alignment of cutter bar and guards; (2) proper registration of the knife; and (3) proper shearing action.

ALIGNMENT

To prevent side draft, excessive "drag" and unnecessary wear on the machine and on the team the center of the pitman box, the knife head and the outer end of the knife bar must be in a straight line during operation. When standing still the outer end of the bar must be ahead of the knife head or have what is called "lead" of about $1\frac{1}{2}$ inches on 5-foot mowers, $1\frac{3}{4}$ inches on a 6-foot and 2 inches on a 7-foot bar. The maker's recommendations should be used if available.

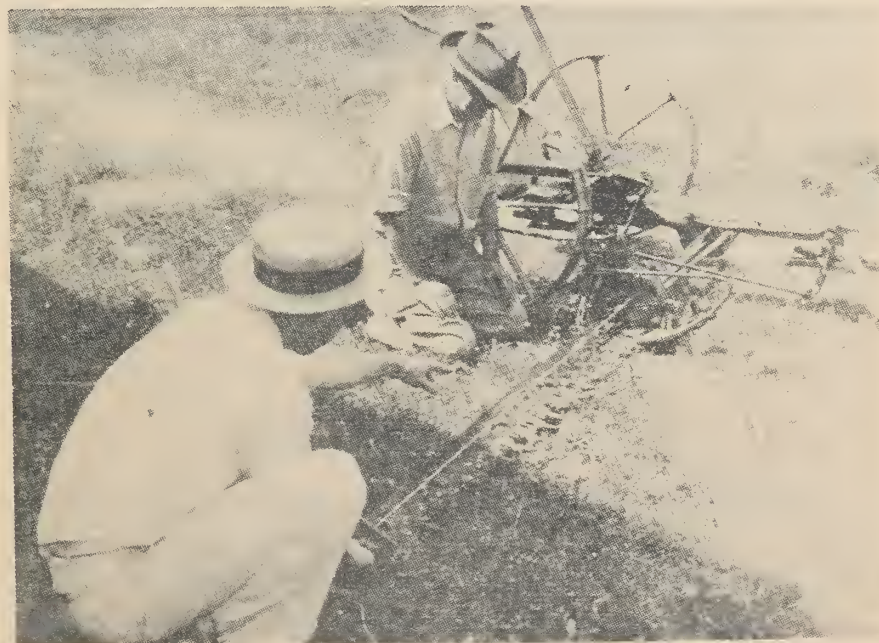


Figure 1.—Using cord to check alignment of mower.

To check alignment block the tongue up to normal operating position and adjust the lifting spring so the inside shoe is just floating.

Loop the end of a cord over center of pitman box, run down over the center of knife head and across the cutter bar to a few inches beyond the outer shoe. Pull the end of the cutter bar back just enough to take up slack due to wear, and measure the space between the cord and the center of the knife at the outer end. See figures 1 and 2A.

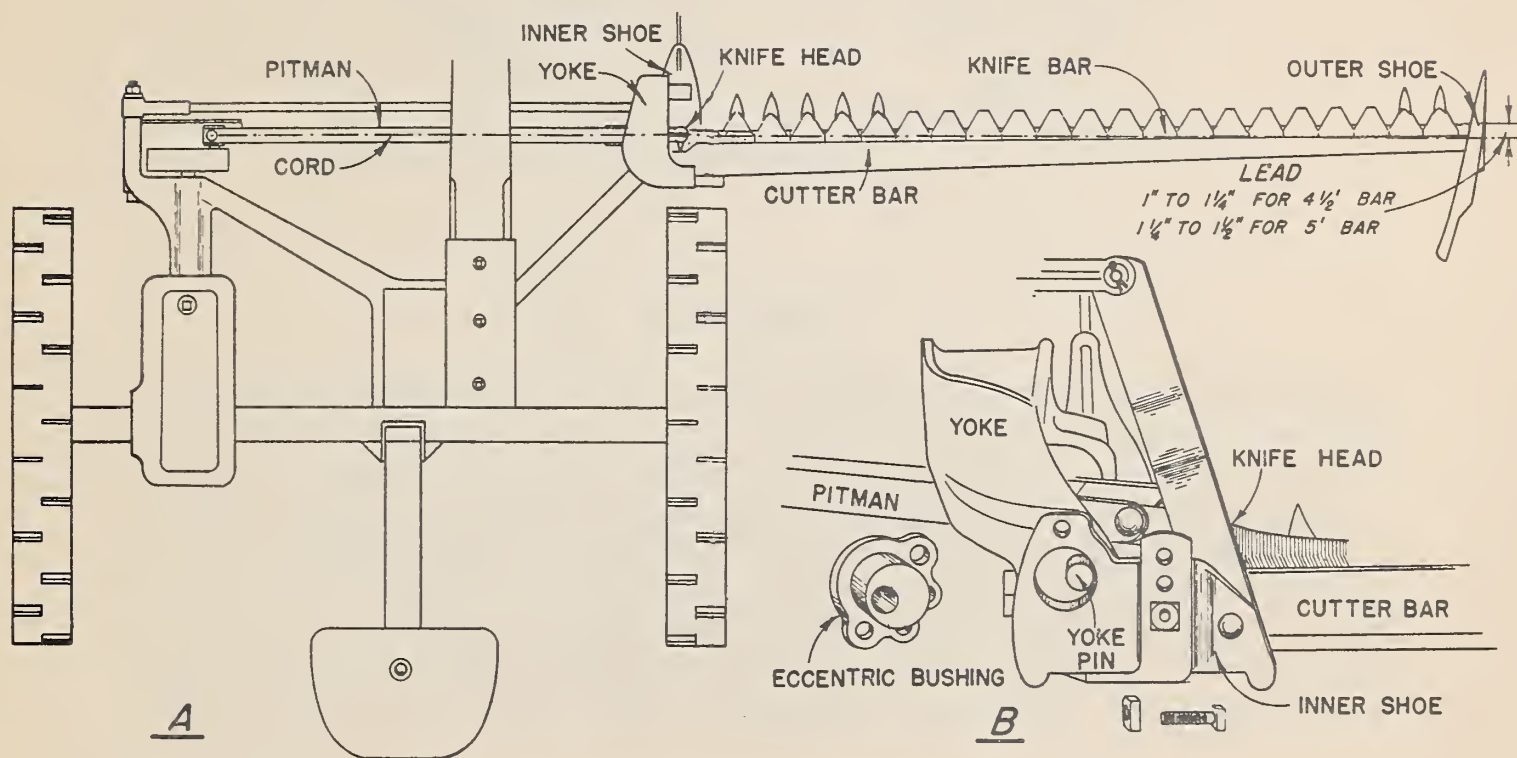


Figure 2.—(A) Illustrated plan of checking mower alignment as shown in Figure 1.
(B) Eccentric bushing provided on some mowers to adjust alignment.

The method of adjustment in alignment depends on the make of machine. If there is no eccentric bushing in the yoke it may be necessary to replace worn pins, or the "drag" bar may be shortened and the "push" bar lengthened provided this does not interfere with proper registering.

REGISTERING

Improper registering results in uneven cutting, uneven load, heavy draft, and often clogging of the knife. This may be easily corrected by adjusting the drag and push bars. If necessary the length of the pitman may be changed. When the knife section is out or in as far as it will go the points of the sections should be in the centers of the guards, as shown in Figure 3.

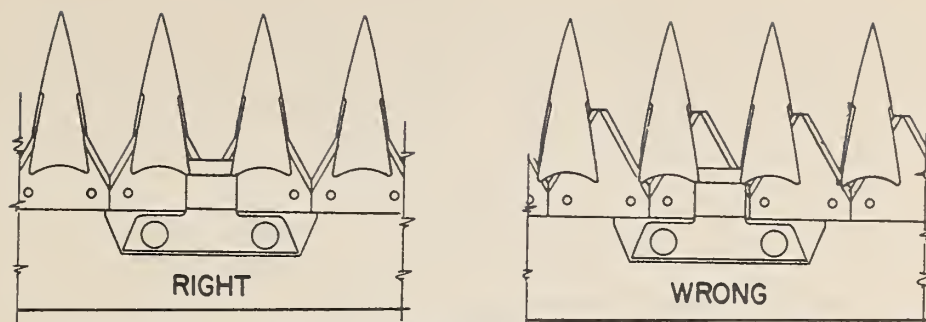


Figure 3.—Checking registration—showing right and wrong position of knife when at end of stroke.

SHEAR ADJUSTMENTS

The knife passing over the guard plates acts like the two parts of a pair of shears, the knife holder or clip acting as the bolt of the shears. Both the knife and the guard plates have cutting edges and must operate with proper relationship to each other. This relationship is obtained by adjustment or replacement of the knife holders and wearing plates as shown in Figure 4. Worn sections are also a source of trouble and a new knife may be the best solution. The holders can be hammered down to take up slack due to wear, but first pull the knife from under the holder to be adjusted.

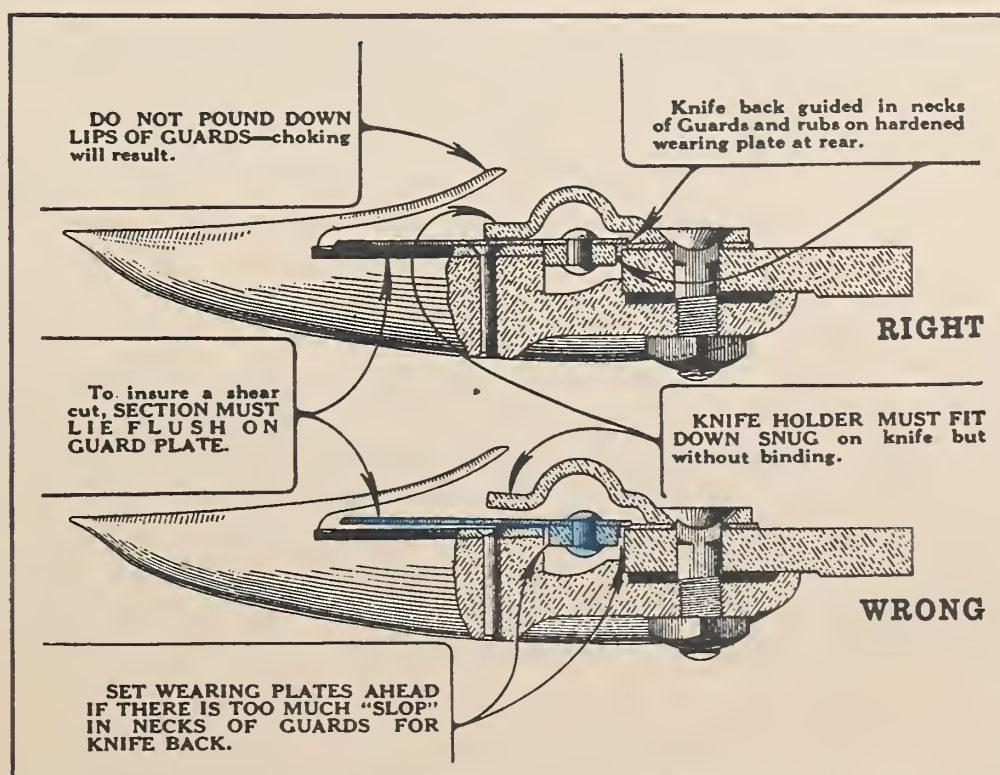


Fig. 4. Right and wrong adjustment of knife to ledger plate.

When the guard plates are worn so the serrated edges are smooth they should be replaced. They are fastened by a projection which fits into the guard at the front and one rivet at the rear. With a guard repair block (Figure 5A) the plates may be removed without taking the guards off. A punch slightly smaller than the rivet is used to punch through the rivet head and a smaller punch with a long shank will drive the rivet out. In replacing, the bottom of the hole may have to be re-countersunk if the underside of the guard is badly worn. The new rivet must fit flush with the bottom of the guard after riveting. A drill bit about twice the size of the rivet hole may be used for countersinking. When replacing the plates the cutter bar is in upright position and a heavy bar held against the head while heading the other end with a ball peen hammer.

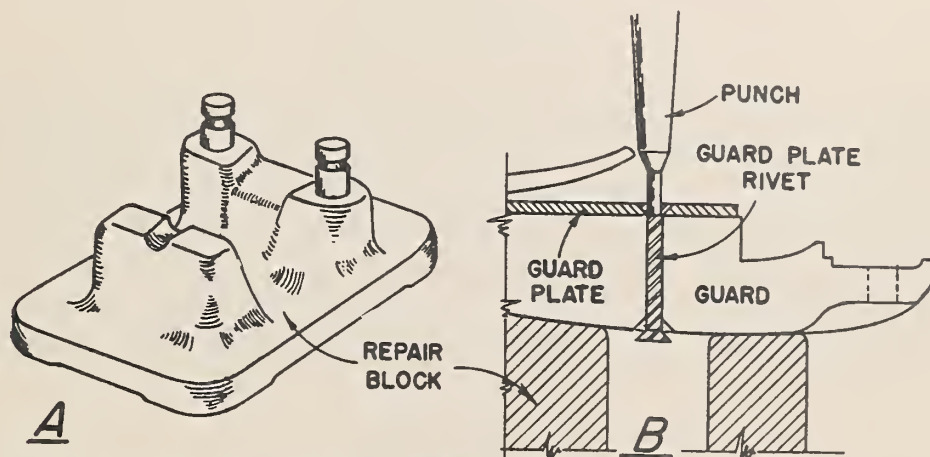


Figure 5.—(A) Special guard repair block for removing guard plates.
(B) Sectional view showing method of removing guard plate rivet.

After replacing worn guard plates and wearing plates it may be necessary to adjust the guards so the tops of the guard plates will be in line. Guards which are high may be hammered down by striking on the thick part of the guard. A new guard may require a thin piece of tin between it and the bar, either in front of or behind the bolt to align it with the other guards.

Some mowers have a habit of breaking the knife bar at a rivet hole near the head. This is often due to a worn knife head and guides, permitting a bending action to occur between the outward thrust and the inward pull of the knife. This may be compared to bending a wire at one place continuously; it finally breaks. Broken or short sections may be quickly removed by resting the back of the knife on an anvil or in a vise and striking the section over each rivet with the hammer. In attaching new sections the rivets may be headed with a ball peen hammer, leaving the rivets high and rounded in the center but tight against the section around the edges.

A sharp, straight, well centered knife, sliding freely without excessive play results in an easy running machine doing a good job. Straighten all bends on a flat iron surface. Always sharpen the sections, using the same bevel as on a new section, the grinding wheel rotating toward the knife. Keep the knife moving back and forth to prevent overheating the edge. Overheated sections sometimes break more easily while in use. Very short sections should be replaced.

LIFTING SPRING

On fairly level ground the lifting spring should be adjusted so the cutter bar practically floats along the ground, yet follows any unevenness of the ground. Less tension may be desired on very rough ground.

LUBRICATION

All moving parts should be oiled frequently while in use, the faster moving parts more frequently. Do not oil the cutter bar except the knife head and knife head guides. The juice from the green grass is sufficient lubrication for the guards, wearing plates and knife holders; oiling only "gums up the works" more. Oil cups should be kept clean. A wad of wool makes a good filter; does not draw into the bearings or mat down like cotton.

BEARINGS

Worn bearings should either be adjusted or replaced if they allow too much play. The adjustment varies on different machines and may be determined by inspection. Excessive pounding at the pitman-wheel connection demands attention. To remedy, the crank pin may be broken off by starting with a hack saw and then striking with a hammer. The small end is easily driven from the wheel. The crank shaft should be removed for this operation, at which time new crank shaft bearings may be installed if needed. Be sure the new crank pin is straight in the wheel. A new pitman bearing should be used with the new crank pin.

NOTE: We wish to acknowledge the courtesy of Clemson Agricultural College of South Carolina for permission to use Figures 1, 2, 3 and 5, and Michigan State College for permission to use Figure 4.

